UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/760,682	01/16/2001	Masum Choudhury	A1-057 US	4082

23683 7590 01/29/2003

MOLEX INCORPORATED
2222 WELLINGTON COURT
LISLE, IL 60532

EXAMINER
WANG, GEORGE Y

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 01/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/760,682	CHOUDHURY ET AL.	
	Examiner	Art Unit	
	George Y. Wang	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 December 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 December 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The corrected or substitute drawings were received on 23 December 2002. These drawings are accepted by Examiner.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-11, 13-25, and 27-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bunin et al. (U.S. Patent No. 5,907,651, from hereinafter "Bunin") in view of Yanagawa et al. (U.S. Patent No. 5,297,228, from hereinafter "Yanagawa").

Regarding claim 1, 21, and 33, Bunin discloses a passive alignment fiber optic connection system (fig. 3) and method having a two connector modules (fig. 3, ref. 24, 32) with a plurality of optical fibers (fig. 3, ref. 36) terminating flush against the connector face (col. 4, lines 29-32). Bunin also teaches at least two projecting pins (fig. 3, ref. 38) with corresponding pin passages (fig. 3, ref. 42) spaced from one another and from optical fibers with predetermined alignment patterns (fig. 4, ref. 54, 60, 100; col. 4, lines 55-58) for center-to-center alignment between connectors. Bunin also teaches the use of filler to accommodate fiber waveguides (col. 4, lines 62-65).

However, Bunin fails to specifically disclose a substrate with terminating ends at a first or second face that serves as an intermediary between the two connector modules.

Yanagawa discloses an optical waveguide connector with an intermediary substrate module (fig. 5, ref. B2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have sandwiched between two connector modules a dual wafer substrate module since one would be motivated by a high-reliability connection that can be carried out in a short time (col. 2, lines 2-7). Furthermore, providing a waveguide

substrate not only permits ease of connection, but also significantly reduces optical loss (col. 3, lines 11-12).

As to claims 2-4, 22-24, and 34-35, Bunin discloses a passive alignment fiber optic connection system and method as recited above having a two connector modules (fig. 3, ref. 24, 32) with a plurality of optical fibers (fig. 3, ref. 36) terminating flush against the connector face (col. 4, lines 29-32). Bunin also teaches at least two projecting pins (fig. 3, ref. 38) with corresponding pin passages (fig. 3, ref. 42) spaced from one another and from optical fibers with predetermined alignment patterns (fig. 4, ref. 54, 60, 100; col. 4, lines 55-58) for center-to-center alignment between connectors.

As per claims 5-11, 25, 36-39, Bunin discloses a passive alignment fiber optic connection system and method as recited above where the respective ends of the fibers, which are generally perpendicular to the connector face, are closely spaced (fig. 3) from that of the other connector, whose face is also generally perpendicular to the length of the guides, before fully engaging in contact alignment (col. 2, lines 23-54).

Regarding claim 13-15 and 27-28, Bunin discloses a passive alignment fiber optic connection system and method as recited above. However, Bunin fails to specifically disclose a substrate, which contains no fibers and no grooves for receiving fibers, that serves as an intermediary between the two connector modules.

Yanagawa discloses an optical waveguide connector with an intermediary substrate module (fig. 5, ref. B2) that contains waveguides that are generally perpendicular to a first or second face of the substrate and no fibers or grooves for receiving fibers.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have sandwiched between two connector modules a dual wafer substrate module containing no optical fibers or grooves for receiving fibers since one would be motivated by a high-reliability connection that can be carried out in a short time (col. 2, lines 2-7). Furthermore, providing a waveguide substrate not only permits ease of connection, but also significantly reduces optical loss (col. 3, lines 11-12).

Regarding claims 16-20, 29-32, and 40-41, Bunin discloses a passive alignment fiber optic connection system (fig. 3) as recited above. However, the Bunin reference does not specifically teach a substrate that is made of two wafers such that one wafer has a plurality of waveguides while the other has a plurality of channels with when assembled together, contains filler to accommodate the waveguides.

Yanagawa teaches two wafers, one having a plurality of waveguides (fig. 2) while the other having a plurality for corresponding channels (fig. 1) for assembly.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have sandwiched between two connector modules a dual wafer substrate module containing no optical fibers or grooves for receiving fibers since one would be motivated by a high-reliability connection that can be carried out in a short

time (col. 2, lines 2-7). Furthermore, using a filler for the combination two wafers in the substrate of Yanagawa as with the connector of Bunin since one would be motivated to hold and fix the waveguides in a properly spaced relationship to facilitate accurate alignment (abstract).

4. Claims 12 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bunin and Yanagawa in view of Ota et al. (U.S. Patent No. 5,656,120, from hereinafter "Ota").

Bunin and Yanagawa disclose the optical connection system as recited above. However, neither of the references specifically disclose the input end of the substrate module having a different number of waveguide ends than that of the output end.

Ota discloses an optical substrate array where the input and output ends have a different number of waveguide ends to match those of the connector fibers (fig. 1, ref. 4; col. 3, lines 6-12).

It would have been obvious to one of ordinary skill at the time the invention was made to incorporate a substrate module with input and output ends having a different number of waveguide ends since one would be motivated to optimize coupling. Different waveguide ends to match that of respective optical waveguide connectors makes it possible to perform easily an optical axis adjusting operation (col. 2, lines 22-27), ultimately enhancing optical communications, such as multiplexing and demultiplexing functions.

Response to Arguments

5. Applicant's arguments with respect to claims 1-41 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Y. Wang whose telephone number is 703-305-7242. The examiner can normally be reached on M-F, 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 703-305-3492. The fax phone numbers

for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

gw
January 24, 2003